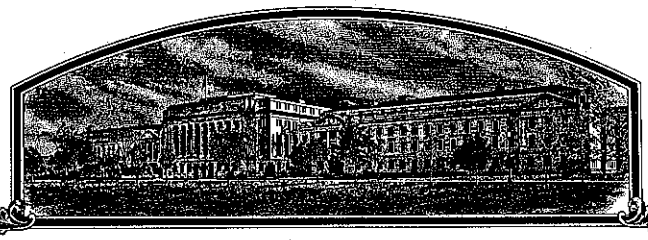

No. 9400122

# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

## Colorado State University

Whereas, THERE HAS BEEN PRESENTED TO THE

**Secretary of Agriculture**

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS ... OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS ... BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'Jules'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington, D.C. *this* 31st *day of* May *in the year of our Lord one thousand nine hundred and* ninety-four.

*Attest:*

*Kenneth A. Evans*

*Commissioner*
*Plant Variety Protection Office*
*Agricultural Marketing Service*

*Secretary of Agriculture*

FORM APPROVED: OMB 0581-0055, Expires 1/31/91

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

# APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

*(Instructions on reverse)*

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) *(as it is to appear on the Certificate)*
COLORADO STATE UNIVERSITY

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO.
CO 860094

3. VARIETY NAME
Jules

4. ADDRESS *(street and no. or R.F.D. no., city, state, and ZIP)*
Department of Agronomy
Colorado State University
Fort Collins, CO 80523

5. PHONE *(Include area code)*
(303) 491-6483

FOR OFFICIAL USE ONLY

PVPO NUMBER
9400122

FILING
Date: 03/14/94
Time: ☐ A.M. ☐ P.M.

FEES RECEIVED
Filing and Examination Fee: $ 2150.00 & 175.00
Date: 03/14/94 & 03/28/94
Certificate Fee: $ 275.00
Date: 5/2/94

6. GENUS AND SPECIES NAME
Triticum aestivum L.

7. FAMILY NAME *(Botanical)*
Gramineae

8. CROP KIND NAME *(Common Name)*
Wheat, common

9. DATE OF DETERMINATION
March 30, 1993

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION *(Corporation, partnership, association, etc.)*
COLORADO STATE UNIVERSITY

11. IF INCORPORATED, GIVE STATE OF INCORPORATION

12. DATE OF INCORPORATION

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
James S. Quick
Agronomy Department
Colorado State University
Fort Collins, CO 80523

PHONE *(Include area code)*: (303) 491-6483

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED *(Follow INSTRUCTIONS on reverse)*

a. ☒ Exhibit A, Origin and Breeding History of the Variety.
b. ☒ Exhibit B, Novelty Statement.
c. ☒ Exhibit C, Objective Description of Variety.
d. ☒ Exhibit D, Additional Description of Variety.
e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.
f. ☒ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office _____.
g. ☒ Filing and Examination Fee ($2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See section 83(a) of the Plant Variety Protection Act.)*
☒ YES *(If "YES," answer items 16 and 17 below)* ☐ NO *(If "NO," skip to item 18 below)*

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☒ YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☒ FOUNDATION ☒ REGISTERED ☒ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
☐ YES *(If "YES," through* ☐ Plant Variety Protection Act ☐ Patent Act. Give date: _____.)
☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
☐ YES (If "YES," give names of countries and dates)
☒ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

| SIGNATURE OF APPLICANT *(Owner(s))* | CAPACITY OR TITLE | DATE |
|---|---|---|
| James S. Quick | Professor | March 3, 1994 |
| SIGNATURE OF APPLICANT *(Owner(s))* | CAPACITY OR TITLE | DATE |
| | | |

EXHIBIT A - BREEDING HISTORY

Genealogy : Jules, PI 564851, is a selection from the cross

NE76667/Hawk

NE76667: Warrior *5/Agent//Agate sib

The breeding method used was a modified pedigree system. The final cross was made in 1981. The $F_1$ was increased in the field in 1982 and the $F_2$ spaced plant population was grown in the field at Fort Collins in 1983. Individual plant selection was propagated into the $F_3$ in 1984, the $F_4$ in 1985, and the $F_5$ in 1986. The $F_5$ row selected was bulked and entered in preliminary and advanced yield trials as CO860094. Approximately 60 heads were selected to propagate breeders seed in 1991. CO860094 was entered in extensive yield testing in Colorado in 1990-93. It was entered in the Southern Regional Performance Nursery in 1991 and 1992. Approximately 250 pounds of breeders seed were produced in 1991. CO860094 was entered in the small scale milling and baking trials and evaluated by the Hard Wheat Quality Advisory Committee in February 1991 and 1993. The breeders seed was planted under irrigation in 1991 and approximately 120 bushels of foundation seed were harvested in 1992. The 1992 foundation seed production was distributed to Seed Growers in September of 1992 and the cultivar was named and released by the Colorado Variety Recommendation Committee on March 30, 1993. Under an isolated reproductive system the variety has no known variants and is stable to the best of our knowledge with respect to genetic change caused by mutations or heterozygosity.

EXHIBIT B - NOVELTY STATEMENT

Jules produces seed which is larger than Yuma but has characteristically lower test weight under shorter growing seasons. The plant is dark green in the seedling stages and shows the effect of a dwarfing gene early in its growth stages when compared to standard height cultivars. The mature plant is similar in height to Yuma and similar in coleoptile length to TAM 107 and has shorter coleoptiles than cultivars such as Scout 66 and Sandy. Jules has stiff erect straw and is more resistant to lodging than taller cultivars, especially under irrigation. Jules has weaker straw than semidwarf wheats such as Yuma, TAM 200, and TAM 107. Jules is most similar to Hawk, one of its parents; however, Jules is 4 days later in maturity and is more resistant to prevalent races of leaf rust (caused by Puccinia recondita Roberge ex Desmaz.). The tillering ability and lodging of Jules is slightly greater than Yuma under irrigated conditions. Jules has superior winter hardiness (survival) compared to Yuma and is similar to Hawk. Jules has more tolerance to hail than Yuma or Hawk, probably due to a more lax spike at maturity.

FORM APPROVED: OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK AND SEED DIVISION
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Wheat)

# OBJECTIVE DESCRIPTION OF VARIETY
## WHEAT (*TRITICUM SPP.*)

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S)
Colorado State University

ADDRESS (*Street and No. or R.F.D. No., City, State, and ZIP Code*)
Agronomy Department
Colorado State University
Fort Collins, CO 80523

FOR OFFICIAL USE ONLY

PVPO NUMBER
9400122

VARIETY NAME OR TEMPORARY DESIGNATION
JULES

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. KIND:
[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:
[2] 1 = SPRING 2 = WINTER 3 = OTHER (*Specify*) _____
[2] 1 = SOFT 2 = HARD 3 = OTHER (*Specify*) _____
[2] 1 = WHITE 2 = RED 3 = OTHER (*Specify*) _____

3. SEASON - NUMBER OF DAYS FROM EMERGENCE TO:
[2][5][6] FIRST FLOWERING
[2][6][2] LAST FLOWERING

4. MATURITY (*50% Flowering*):
[ ][ ] NO. OF DAYS *EARLIER* THAN .....
[ ][2] NO. OF DAYS *LATER* THAN .....
[ ] [2] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

5. PLANT HEIGHT (*From soil level to top of head*):
[ ][8][6] CM. HIGH
[ ][ ] CM. TALLER THAN .....
[1][8] CM. SHORTER THAN .....
[ ] [2] 1 = ARTHUR 2 = SCOUT 3 = CHRIS 4 = LEMHI 5 = NUGAINES 6 = LEEDS

6. PLANT COLOR AT BOOTING (*See reverse*):
[2] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:
[1] 1 = YELLOW 2 = PURPLE

8. STEM:
[1] Anthocyanin: 1 = ABSENT 2 = PRESENT
[1] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT
[ ][5] NO. OF NODES (*Originating from node above ground*)
[2] Waxy bloom: 1 = ABSENT 2 = PRESENT
[1] Internodes: 1 = HOLLOW 2 = SOLID
[2][5] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:
[1] Anthocyanin: 1 = ABSENT 2 = PRESENT
[1] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:
[1] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER (*Specify*): _____
[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT
[1][8] MM. LEAF WIDTH (*First leaf below flag leaf*)
[1] Flag leaf: 1 = NOT TWISTED 2 = TWISTED
[2] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT
[3][1] CM. LEAF LENGTH (*First leaf below flag leaf*):

9400122

**11. HEAD:**

[1] Density: 1 = LAX 2 = DENSE

[1] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify) _____

[4] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[1] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER (Specify): _____

[ ][9] CM. LENGTH [1][1] MM. WIDTH

**12. GLUMES AT MATURITY:**

[2] Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.)

[2] Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.)

[2] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[3] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

**13. COLEOPTILE COLOR:**

[1] 1 = WHITE 2 = RED 3 = PURPLE

**14. SEEDLING ANTHOCYANIN:**

[1] 1 = ABSENT 2 = PRESENT

**15. JUVENILE PLANT GROWTH HABIT:**

[2] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

**16. SEED:**

[1] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[1] Brush. 1 = SHORT 2 = MEDIUM 3 = LONG

[1] Brush: 1 = NOT COLLARED 2 = COLLARED

[4] Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____

[ ][7] MM. LENGTH [ ][3] MM. WIDTH [3][5] GM. PER 1000 SEEDS

**17. SEED CREASE:**

[3] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[1] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

**18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)**

[2] STEM RUST (Races) 56,15,15 B2 151,17

[2] LEAF RUST (Races) Lr10, 14a

[0] STRIPE RUST (Races) _____

[0] LOOSE SMUT

[1] POWDERY MILDEW

[1] BUNT

[ ] OTHER (Specify) _____

**19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)**

[0] SAWFLY

[0] APHID (Bydv.)

[0] GREEN BUG

[0] CEREAL LEAF BEETLE

[1] OTHER (Specify) R. Wheat Aphid

HESSIAN FLY RACES: [0] GP [0] A [0] B [0] C [0] D [0] E [0] F [0] G

**20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:**

| CHARACTER | NAME OF VARIETY | CHARACTER | NAME OF VARIETY |
|---|---|---|---|
| Plant tillering | HAWK | Seed size | HAWK |
| Leaf size | HAWK | Seed shape | HAWK |
| Leaf color | HAWK | Coleoptile elongation | TAM 107 |
| Leaf carriage | HAWK | Seedling pigmentation | HAWK |

## INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook on seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

MAR 14 1994

## EXHIBIT D - ADDITIONAL DESCRIPTION

The cultivar Jules has been released based its performance data. It had a 3% yield advantage over TAM 107 in comparative dryland trials in 1990-92. Jules is a semidwarf height, awned, white chaff hard red winter wheat. It is slightly later and taller than TAM 107 or Yuma and has lax heads at maturity. It has several advantages compared to current cultivars; however, since it is slightly later in maturity, major production should be limited to Colorado counties, and to other areas, where longer season cultivars can express their yield and test weight potential, and to irrigated areas. Data are attached to support the performance evaluation. Jules has been field-tested in Colorado for agronomic, quality and disease reactions since 1986 as CO860094. It was tested in regional trials in 1991 and 1992 and in state trials since 1990. Jules is superior to TAM 107 in leaf rust resistance, and slightly inferior in resistance to the wheat curl mite (transmitter of wheat streak mosaic virus). End use quality has been equal or superior to all currently grown cultivars except Lamar. Lamar is superior to Jules in all quality traits except dough mixing time and loaf volume.

## EXHIBIT E - OWNERSHIP

The applicant is the developer and true owner of this cultivar, and is the employer of the breeding team.

# GRAIN YIELD COMPARISONS (bu/a)

## 1990-1992

| Variety | 1990 | 1991 | 1992 | 1990-92 | 1990-92 Ovid | 1990-92 Genoa | 1990-92 Ov. + Gn. |
|---|---|---|---|---|---|---|---|
| **HIGH MOISTURE DRYLAND VARIETY TRIALS** | | | | | | | |
| Locations: | 10 | 7 | 6 | 23 | 3 | 3 | 6 |
| Jules | 38.2 | 44.4 | 49.2 | 43.9 | 42.2 | 45.5 | 43.8 |
| Yuma | 45.6 | 38.0 | 38.1 | 40.6 | 32.6 | 42.1 | 37.4 |
| TAM 107 | 44.1 | 41.5 | 46.2 | 42.6 | 36.3 | 46.9 | 41.6 |
| TAM 200 | 44.4 | 39.4 | 44.4 | 42.7 | 35.2 | 42.6 | 38.0 |
| Sandy | 37.7 | 38.3 | 44.5 | 40.2 | 35.6 | 40.9 | 38.2 |
| Lamar | 39.6 | 40.3 | 42.1 | 40.7 | 39.3 | 42.3 | 40.8 |
| Arapahoe | 40.8 | 40.2 | 35.0 | 38.6 | 41.1 | 39.7 | 40.4 |

* Average of 3 years, not weighted by locations

| Variety | 1990 | 1991 | 1992 | 1990-92 |
|---|---|---|---|---|
| **IRRIGATED VARIETY TRIALS** | | | | |
| Locations: | 4 | | 3 | 7 |
| Jules | 79.8 | - | 80.6 | 80.2 |
| Yuma | 78.3 | - | 90.1 | 84.2 |
| TAM 107 | 70.6 | - | 85.7 | 78.2 |
| TAM 200 | 79.4 | - | 90.8 | 85.1 |

# AGRONOMIC COMPARISONS, 1990-1992

| | Jules | Yuma | TAM 107 | TAM 200 | Sandy | Lamar | Arapahoe |
|---|---|---|---|---|---|---|---|
| Test wt, lb/bu | | | | | | | |
| 91-92 HMVT | 56.1 | 56.7 | 58.1 | 59.4 | 58.0 | 58.8 | 56.8 |
| 92 IVT | 56.3 | 59.0 | 56.4 | 58.1 | 56.8 | - | - |
| Height, in. | | | | | | | |
| HMVT | 26 | 26 | 26 | 25 | 30 | 30 | 28 |
| Lodging, 0-9 | | | | | | | |
| 5 locations | 3.3 | 2.8 | 0.6 | 2.1 | 4.5 | 4.0 | 5.8 |
| Days to head | | | | | | | |
| 2 locations | 150 | 146 | 142 | 146 | 150 | 148 | 148 |
| Hail loss, % | | | | | | | |
| 1 location | 15 | 38 | 25 | 25 | 28 | 42 | 45 |
| Winter surv., % | | | | | | | |
| 2 locations | 90 | 40 | 90 | 50 | 80 | 80 | 90 |
| Leaf rust, 0-9 | | | | | | | |
| 4 locations | 0.0 | 5.5 | 7.5 | 0.2 | 3.0 | 3.0 | 1.0 |
| WSMV, 0-9 | | | | | | | |
| 2 locations | 2.2 | 1.2 | 0.5 | 1.8 | 4.0 | 1.9 | 3.5 |
| Coleoptile, mm. | | | | | | | |
| 2 locations | 91 | 82 | 95 | 91 | 103 | 98 | 96 |

HMVT = Higher Moisture Dryland Variety Trial
IVT = Irrigated Variety Trial

# Wheat Quality Comparisons
## 1990-1992

| | Flour | | Dough* Mix | Loaf** | | Overall Baking |
|---|---|---|---|---|---|---|
| | % Protein | % $H_2O$ Abs. | Time | Volume | Crumb Grain | Score |
| **1990 Wheat Quality Council** | | | | | | |
| | | *** | | *** | *** | *** |
| Jules | 11.7 | 2.7 | 5.5 | 2.7 | 2.4 | 2.3 |
| Yuma | 11.9 | 3.1 | 4.0 | 2.9 | 3.0 | 2.5 |
| **1992 Wheat Quality Council** | | | | | | |
| | | *** | | *** | *** | *** |
| Jules | 13.0 | 3.1 | 3.6 | 3.0 | 2.9 | 3.0 |
| TAM 107 | 13.0 | 3.4 | 3.4 | 3.1 | 2.2 | 2.3 |
| Yuma | - | - | - | - | - | - |
| Lamar | 14.0 | 3.6 | 2.9 | 3.6 | 2.8 | 3.1 |
| **1991 CSU Lab - Akron Seed** | | | | | | |
| | | | | | *** | |
| Jules | 11.7 | - | 4.2 | 840 | 2.2 | - |
| TAM 107 | 9.6 | - | 2.9 | 795 | 2.4 | - |
| Yuma | 12.2 | - | 4.9 | 820 | 2.4 | - |
| Lamar | 11.0 | - | 4.0 | 845 | 2.6 | - |
| **1992 CSU Lab - Akron Seed** | | | | | | |
| | | | | | *** | |
| Jules | 11.3 | - | 4.6 | 815 | 2.6 | |
| TAM 107 | 10.2 | - | 3.8 | 890 | 2.4 | |
| Yuma | 11.0 | - | 4.0 | 805 | 2.8 | |
| Lamar | 12.5 | - | 3.3 | 870 | 3.0 | |

* Dough mix time is time to curve peak on mixograph.
** Loaf volume is in cubic centimeters; crumb grain is 1 to 6 score.
*** 1 to 6 score, 6 = superior

-